4.2.6.10 Waste Management

This section summarizes the impacts on waste management at SRS under No Action, for each of the long-term storage alternatives, and for the phaseout of Pu storage. There is no spent nuclear fuel or HLW associated with Pu or HEU storage. Table 4.2.6.10–1 lists the projected sitewide waste generation rates and treatment, storage, disposal capacities under No Action for 2005. Projections for No Action were derived from the most recent available environmental data, with the appropriate adjustments made for those changing operational requirements where the volume of wastes generated were identifiable. The projection does not include wastes from future, yet uncharacterized, environmental restoration activities. The projections for No Action could change significantly depending on the decisions resulting from the PEIS being prepared by the Department on waste management. Table 4.2.6.10–2 provides the estimated incremental operational waste volumes projected to be generated at SRS as a result of the various storage alternatives prior to treatment. Some of the waste values described in this section are different than the waste values in the table. For those values that differ (for example LLW), the table gives waste generated pre-treatment values and the text discusses post-treatment values (indicated as after treatment and volume reduction). For example, the new consolidated Pu storage facility would generate 10 m^3 (13 yd^3) of solid TRU waste. Since SRS already stores Pu, the waste volumes associated with the phaseout of Pu storage (8 m^3 [10.5 yd^3]) must be subtracted out to avoid double counting waste volumes associated with Pu storage. This results in a net incremental increase from the alternative of 2 m^3 (2.6 yd^3). The subtraction of the phaseout volumes to avoid the double counting of waste volumes is only applicable to the consolidation and collocation alternatives. The waste volumes generated from the various storage alternatives and the resultant waste effluent used for the waste impact analysis can be found in Section E.3.1. For the consolidation and collocation alternatives, the waste effluent volumes in the impact analysis refer only to wastes from the applicable storage facility, not the net incremental increase/decrease for SRS as a whole. Facilities that would support the storage of Pu and/or HEU would treat and package all waste generated into forms that would enable staging and/or disposal in accordance with RCRA, and other applicable statutes. Depending on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated, and depending on the type of waste disposed of onsite or at regionalized or centralized DOE sites. For the purposes of analyses only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed of in accordance with current site practice.

No Action Alternative

Under No Action, high-level, TRU, low-level, mixed, hazardous, and nonhazardous wastes, and spent nuclear fuel would continue to be managed from the missions outlined in Section 3.7. SRS's mission would include tritium recycling, management of nuclear materials, isotopes, and aluminum-clad and research reactor spent fuel, decommissioning of reactors and site facilities, and remediation. Under No Action, SRS would continue to store its inventory of Pu, and treat, store, and dispose of its legacy and newly generated wastes in current and planned facilities.

Under No Action, the processing of legacy wastes would require new facilities, since the necessary treatment, storage, and disposal facilities either do not exist or are nearing capacity. Spent nuclear fuel would be managed in accordance with the ROD (60 FR 28680) from the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE/EIS-0203-F) as amended on March 8, 1996 (61 FR 9441) and the ROD from the *Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel Final Environmental Impact Statement* (61 FR 25092), which state that SRS would be responsible for the management of aluminum-clad spent nuclear fuel from the Department's nationwide complex, as well as receiving spent nuclear fuel from domestic and foreign research reactors. The ROD also states that SRS non-aluminum-clad spent nuclear fuel from past production reactor operations would be shipped to INEL by the year 2035.

Since the K-Reactor is shutdown with no provision for restart, there would be no additional spent reactor fuel generated. A site-specific EIS is planned for SRS, which is expected to result in an ROD that specifies where and how spent nuclear fuel would be managed at SRS.The Pu addressed in this PEIS is limited to materials currently stored within protected vaults and gloveboxes, and additional materials within process lines and process equipment. Pu processing operations such as Pu purification, Pu recovery, oxide production, metal production, and parts fabrication have been conducted onsite, as well as receipt and large-scale storage of onsite and offsite Pu scrap and product materials. Under No Action, SRS would not be able to maintain the inventory of Pu scrap and metal in a state that provides for long-term storage while awaiting a decision for future disposition. The APSF would be constructed to meet current regulations. Maintenance, assay, packaging, and monitoring of the inventory would produce TRU, low-level, hazardous, and nonhazardous wastes. These wastes would be treated, stored, and disposed of in compliance with existing regulations.

Transuranic waste already packaged to WIPP WAC would either be stored or would have been shipped. Vitrification is planned to reduce waste shipment volume. If shipments to WIPP are delayed, or should the Department decide not to dispose of TRU waste at WIPP, additional storage facilities would be designed and constructed as needed. Mixed waste would have been incinerated, stabilized and the remaining residues disposed of onsite as LLW, according to the SRS Site Treatment Plan, which was developed to comply with the *Federal Facility Compliance Act.*

Liquid LLW would be sent to collection tanks that would be batch transferred to treatment and storage facilities onsite such as the ETF or the F-Area Tank Farm. Liquid LLW concentrate would be processed into saltstone. Solid LLW would continue to be compacted and disposed of by burial onsite in engineered trenches or vaults, depending on the LLW category. The burial ground expansion in the E-Area is expected to accommodate the current waste disposal requirements through 2024. Additional waste disposal facilities would be constructed as needed to ensure compliance. The Consolidated Incineration Facility would also be utilized to reduce the volume of LLW requiring disposal. Discussion of additional LLW disposal capacity was addressed in the *Savannah River Site Waste Management Final Environmental Impact Statement* (DOE/EIS-0217).

Savannah River Site plans to ship hazardous waste offsite for treatment and disposal in RCRA-permitted facilities. A RCRA-permitted hazardous waste storage and disposal facility is currently being designed to handle projected wastes from current operations. Specific areas are being reserved for future expansion.

Sanitary and nonhazardous process waste liquids are treated by various means to remove water and must comply with two CWA settlement agreements. Liquid sanitary waste would be piped to existing wastewater treatment facilities. The treated sanitary and process water would be discharged through NPDES outfalls and the resultant solids would be disposed of with solid nonhazardous waste in a permitted landfill sized to handle projected future waste volumes. SRS-generated municipal solid waste is currently being sent to a permitted offsite disposal facility. DOE is evaluating a proposal to participate in an interagency effort to establish a regional solid waste management center at SRS.

Upgrade Alternative

Preferred Alternative: Upgrade With Rocky Flats Environmental Technology Site Non-Pit Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Modification of the APSF to incorporate RFETS non-pit Pu would have a small impact on existing SRS waste management activities. Construction waste volumes as presented in Table E.3.1.1–8 would consist of wastewater and solid nonhazardous and hazardous waste. Nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped offsite to commercial

RCRA-permitted treatment and disposal facilities. As shown in Table 4.2.6.10–2, the generation of TRU, mixed TRU, low-level, mixed low-level, or liquid hazardous wastes would not increase over that of No Action. The 0.56-m^3 (0.73-yd^3) increase in solid hazardous waste generation would have no impact on SRS hazardous waste management facilities. The 1,490-m^3 (392,500-gal) increase in liquid nonhazardous waste can be accommodated in existing wastewater treatment facilities. After volume reduction, the 11 m^3 (14 yd^3) of solid nonhazardous waste such as clean non-Pu metals, packing materials, trash, defective and damaged equipment, and industrial waste from utility and maintenance operations would be shipped in accordance with site practice to a sanitary landfill with minimal impact.

[Text deleted.]

Upgrade With All or Some Rocky Flats Environmental Technology Site Plutonium and Los Alamos National Laboratory Plutonium Subalternative

Modify Actinide Packaging and Storage Facility for Continued Plutonium Storage

Modification of the APSF to incorporate RFETS and LANL material would have a small impact on existing SRS waste management activities. Construction waste volumes as presented in Table E.3.1.1–9 would consist of wastewater and solid nonhazardous and hazardous waste. Nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped offsite to commercial RCRA-permitted treatment and disposal facilities. As shown in Table 4.2.6.10–2 the generation of TRU, mixed TRU, low-level, mixed low-level, or liquid hazardous wastes would not increase over that of No Action. The 0.8 m^3 (1 yd^3) increase in solid hazardous waste generation would have minimal impact on SRS hazardous waste management facilities. The 1,806 m^3 (477,000 gal) increase in liquid nonhazardous waste can be accommodated in existing wastewater treatment facilities. After volume reduction, the 14 m^3 (18 yd^3) of solid nonhazardous waste such as clean non-Pu metals, packing materials, trash, defective and damaged equipment, and industrial waste from utility and maintenance operations would be shipped to a sanitary landfill with minimum impact. Distributing the RFETS and LANL material to more than one site would reduce the operational waste volumes. The decrease would be proportional to the amount of material.

Consolidation Alternative

Construct New Plutonium Storage Facility

Construction and operation of a consolidated Pu storage facility would have an impact on existing SRS waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater and solid nonhazardous and hazardous wastes. The nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous material or radioactive constituents is expected to be generated during construction. However, if any is generated it would be managed in accordance with site practice and all applicable Federal and State regulations. The types of operational wastes from the consolidated Pu storage facility would be the same as those from the upgrade, but the quantity would change, as shown in Table 4.2.6.10–2.

After treatment and volume reduction of TRU waste, approximately 5 m^3 (7 yd^3) of TRU waste and 4 m^3 (5 yd^3) of mixed TRU waste from leaded gloves and windows, and contaminated lead shielding would be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level. While awaiting shipment to WIPP (depending on decisions resulting from the supplemental EIS noted earlier), the TRU waste would be stored in special purpose containers in above-grade storage facilities. One additional truck shipment per year or, if applicable, one regular train shipment every 2 years or one dedicated train shipment every 6 years would be required to transport these wastes to WIPP.

Following treatment and reduction, approximately 630 m^3 (824 yd^3) of LLW would be compacted and buried onsite in engineered trenches or vaults, depending on the LLW category. Assuming a land usage of 8,600 m^3/ha (4,500 yd^3/acre), this would require 0.07 ha/yr (0.2 acres/yr) of LLW disposal area. The 0.2 m^3 (55 gal) of liquid mixed LLW and 65 m^3 (85 yd^3) of solid mixed LLW would be incinerated, stabilized and the remaining residues disposed of onsite as LLW, in accordance with the SRS Site Treatment Plan through the use of existing and planned facilities. The 2 m^3 (476 gal) and 2 m^3 (3 yd^3) of solid hazardous wastes would have minimal impact on waste management activities at SRS as existing and planned facilities are adequate to handle this increase. The 168,830 m^3 (44,600,000 gal) of liquid nonhazardous wastes (sanitary, utility, and process wastewater) may impact existing F-Area utility and process wastewater treatment capabilities and may require construction or expansion of utility and/or process wastewater treatment systems. The centralized sanitary wastewater treatment system is adequate to treat the sanitary portion of the liquid waste. After volume reduction, 740 m^3 (968 yd^3) of solid nonhazardous waste would require disposal at a permitted sanitary landfill.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Construction and operation of a consolidated Pu storage facility collocated with HEU storage would have an impact on existing SRS waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater, and solid nonhazardous and hazardous wastes. The nonhazardous waste would be disposed of as part of the construction project by the contractor and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous material or radioactive constituents is expected to be generated during construction. However, if any is generated it would be managed in accordance with site practice and all applicable Federal and State regulations.

Because there is no TRU or mixed TRU wastes associated with HEU storage, the impacts from TRU and mixed TRU wastes are identical to those identified in the consolidated Pu storage alternative. The sources of waste are similar to those of the upgraded Pu storage facility except the source of radioactive contamination from the HEU storage is uranium.

After treatment and volume reduction, approximately 630 m^3 (824 yd^3) of LLW contaminated with Pu and 20 m^3 (26 yd^3) of LLW contaminated with uranium would be compacted and buried onsite in engineered trenches or vaults, depending on the LLW category. Assuming a land usage of 8,600 m^3/ha (4,500 yd^3/acre), this would require 0.08 ha/yr (0.2 acre/yr) of LLW disposal area. The 0.2 m^3 (55 gal) of liquid mixed LLW and 66 m^3 (86 yd^3) of solid mixed LLW would be incinerated and stabilized, and the remaining residues disposed of onsite as LLW, in accordance with the SRS Site Treatment Plan through the use of existing and planned facilities. The 2 m^3 (528 gal) of liquid and 2 m^3 (3 yd^3) of solid hazardous waste would have minimal impact on waste management activities at SRS, as existing planned facilities are adequate to handle the increase.

The 214,890 m^3 (56,800,000 gal) of liquid nonhazardous waste may impact existing F-Area utility and process wastewater treatment capabilities and may require construction or expansion of utility and/or process wastewater treatment systems. The centralized sanitary wastewater treatment system is adequate to treat the sanitary portion of the liquid waste. After volume reduction, 940 m^3 (1,230 yd^3) of solid nonhazardous waste would require disposal at a permitted sanitary landfill.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

The exclusion of strategic reserve and weapons R&D materials would reduce the amount of operational waste volumes shown in Table 4.2.6.10–2 for the No Action Alternative, the Upgrade Alternative, the Consolidation

Alternative, and the Collocation Alternative. The decrease would be proportional to the amount of material excluded. [Text deleted.]

Phaseout

The phaseout of Pu storage would have a small impact on SRS waste management activities. Solid TRU waste generation would decrease by 8 m^3 (11 yd^3), solid LLW by 38 m^3 (50 yd^3), and the sanitary waste would decrease by 19,100 m^3 (5,050,000 gal) for liquid and 2,290 m^3 (3,000 yd^3) for solid. All other waste streams would remain unchanged.